

Rooftop Unit Specification Working Group

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



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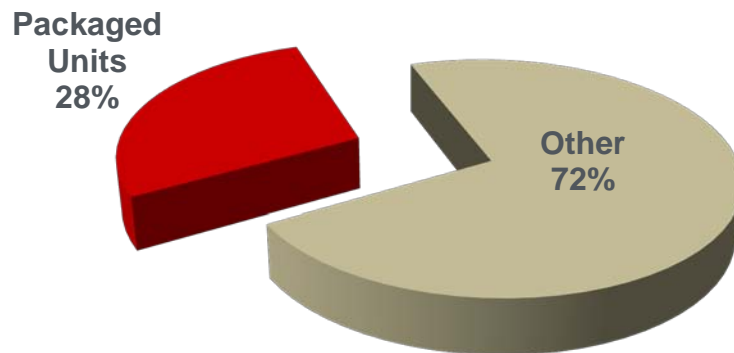
Commercial Building
Energy Alliances

Background

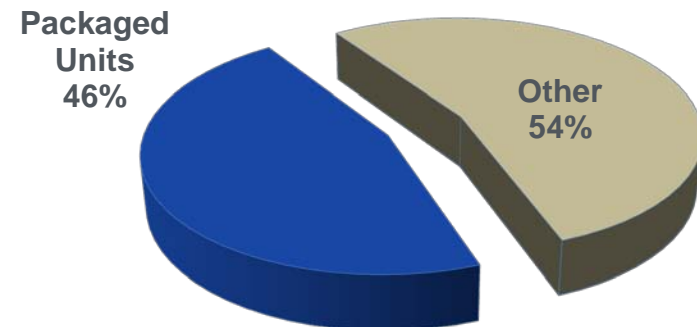
- Technology and System Specification Development
 - LED Parking Lot Lighting
 - High Efficiency Parking Structure Lighting
 - LED Refrigerated Case Lighting
 - High Efficiency UAC Rooftop Air Conditioner
- Volume Purchase/Market Pull
- CBEA recognized Rooftop Packaged Units as an area that would benefit from this approach

Commercial Conditioned Floor Space Heating and Air Conditioning Equipment

Heating



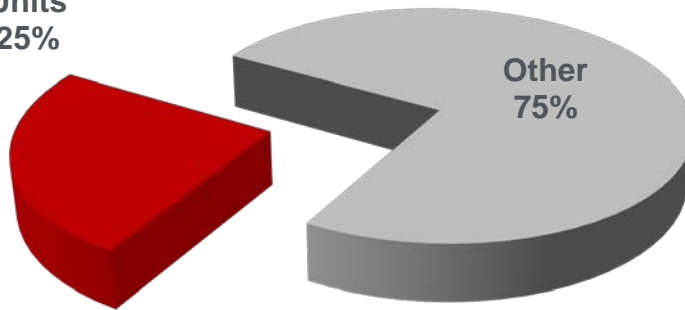
Cooling



Commercial Primary Energy Use: Heating and Cooling Equipment

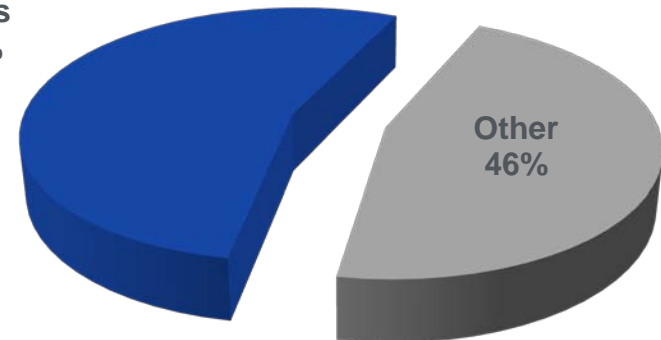
Heating

Packaged
Units
25%



Cooling

Packaged
Units
54%



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Energy Efficiency &
Renewable Energy

Created in 2009

Looking for ways
to improve
RTU efficiency



Milestone

Start – Completion Date

- Establish Working Group Oct. '09 – Feb. '10
- Identify key performance requirements Nov. '09 – Feb. '10
- Request manufacturer part load data Dec. '09 – Feb. '10
- Develop performance product specification Spring 2010
- Request manufacturer feedback Summer 2010
- Expand Evaluation Tool Spring 2010
- User trial of expanded Evaluation Tool Summer 2010
- Issue final product specifications and tool Fall 2010

Red – Alliance member participation

Green – Manufacturers' participation

Current Focus

- Draft a performance specification
 - General construction
 - Unit performance
 - Controls
- Expand Evaluation tool
 - Compare unit performance
 - Calculate life-cycle cost
 - Include more options

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Unitary Air Conditioner Cost Estimator

UAC COSTESTIMATOR	Home	Submit	Restore
Welcome to the Unitary Air Conditioner (UAC) energy and cost savings estimator.	State: MO	MO	
This estimator simulates the energy usage of both a high efficiency and a standard efficiency air conditioner. It then compares their energy and economic performance.	City: KANSAS CITY	Kansas City	
To run the estimator, characterize the two systems and their environment using the controls on this page. Then click the submit button. Use your browser back button to return from the results page to this control page. Use the restore button to change all values back to the defaults shown in the far right column. Click here for help on printing.	Schedule: M-Fri, 7 a.m. to 7 p.m.	M-Fri, 7 a.m. to 7 p.m.	
	Indoor Temperature: 75 °F	75 °F	
	Total Capacity: 084 MBtu/h in 2 stages	84 MBtu/h in 2 Stages	
	Oversizing Factor: 0 %	0%	
	Candidate Unit: 12 EER @ 4.5 \$/yr	12 EER \$1500/unit \$0/year	
	Standard Unit: 9 EER @ 4 \$/yr	9 EER* \$1000/unit \$0/year	
	Enable Economizer: <input checked="" type="checkbox"/>	Economizer enabled	
Help on each control can be found by moving the mouse cursor over the question mark near the controls name; wait a second for the pop-up message to appear. Note this help feature works best in the Microsoft Internet Explorer browser. Click on the question marks to bring up a help window with more details.	Electric Utility Rate: 0.08 \$/kWh	0.08 \$/kWh	
Visit the engineering methods pages for additional background information on the UAC Cost Estimator.	Discount Rate: 7 %	7.0 %	
	Equipment Life: 15 years	15 years	
	Number of Units: 1 unit	1 unit	
	Chart present value: <input checked="" type="checkbox"/>	Chart present value	
	Show bin calculations: <input type="checkbox"/>	Hide bin calc	
	Advanced controls: <input type="checkbox"/>	Hidden	
Version 3.1	Home	Submit	Restore

* equipment efficiency minimum total level 0.91.

Current involvement opportunities

- Alliance members:
 - Needs input
 - Spec review (manageable sections)
 - Tool testing
- Manufacturers
 - Part load data
 - Review draft specifications (reality check)



For more information or to join, contact:

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Resources

DOE's Commercial Building Energy Alliances:

<http://buildings.energy.gov/alliances>

Unitary Air Conditioner Cost Estimator (UAC) Tool:

<http://www.pnl.gov/uac/>

References:

- Slides 3 & 4 — data from U.S. Department of Energy *2008 Buildings Energy Data Book*, buildingsdatabook.eren.doe.gov
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